Remarks

Applicant has amended Claim 36 and cancelled Claims 82-83. Entry of the amendment and favorable consideration thereof is earnestly requested.

Claim 1 recites "said first electrically conductive component formed from at least one first noble metal and an oxide deposited within grain boundaries and main body portion of the at least one first noble metal, the oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these" and "said second electrically conductive component formed from at least at least one second noble metal, different than the first noble metal, and an oxide deposited within grain boundaries and main body portion of the at least one second noble metal, the oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these."

Claim 38 recites "said first electrically conductive component formed from an oxide selected from the group consisting of the transitional metal oxides and the rare earth metal oxides, and combinations of these, said oxide dispersion hardened within a grain boundary and within a main body of a first base metal selected from the group consisting of the noble metals and the precious metals, and combination of these" and "said second electrically conductive component formed from an oxide selected from the group consisting of the transitional metal oxides and the rare earth metal oxides, and combinations of these, said oxide dispersion hardened within a grain boundary and within a main body of a second base metal, different than the first base metal, selected from the

group consisting of the noble metals and the precious metals, and combination of these."

Claim 53 recites "forming a first electrically conductive component from at least one first noble metal and an oxide deposited within grain boundaries and main body portion of the at least one first noble metal, the oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these" and "forming a second electrically conductive component from at least at least one second noble metal, different than the first noble metal, and an oxide deposited within grain boundaries and main body portion of the at least one first noble metal, the oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these."

Claim 64 recites "a first electrically conductive component formed from an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, said oxide dispersion hardened within a grain boundary and within a main body of platinum" and "a second electrically conductive component formed from an oxide selected from the group consisting of yttrium oxide, cerium oxide, zirconium oxide, and combinations of these, said oxide dispersion hardened within a grain boundary and within a main body of a platinum rhodium alloy, said second electrically conductive component in contact with said first electrically conductive component to form a junction."

The Examiner has rejected Claims 1, 38, 53 and 64 under 35 U.S.C. §103(a) as unpatentable over U.S. Patent No. 3,462,318 (Bjornson) in view of U.S. Patent No. 6,511,523 (Shoji et al.) and further in view of U.S. Patent No. 4,276,142 (Topp et al.).

The Examiner has submitted that Bjornson discloses "metals coated with zirconia oxide coating 9 (col. 2, lines 41-45)." However, Bjornson fails to teach, disclose or suggest that the oxide is dispersion hardened within grain boundaries of the conductive component as required by all the claims. The Examiner has further cited Shoji stating that "Shoji teaches to creep strengthen (especially grain boundaries) platinum material (second noble metal) by dispersion zirconium oxide in the platinum (abstract)" and that "it would have been obvious . . . to modify the device, disclosed by Bjornson, so as to make the first component by dispersion zirconium oxide in the grain boundaries and within the metal of the first component, as taught by Shoji, in order to creep strengthen the component, as already suggested by shoji." (Official Action 4/5/06, p. 3) In addition, the Examiner cited Topp et al. stating "Topp teaches to disperse zirconium oxide within platinum or a platinum containing metal so as to inhibit the effect or recrystallization especially when the electrode/ wire is used in the exhaust and make it more stable at operating temperatures" and that "it would have been obvious . . . to modify the device, disclosed by Bjornson, so as to make the second component by dispersion zirconium oxide in the grain boundaries and within the metal of the first component, as taught in Topp, in order to make it more stable at high temperatures." (Official Action 4/5/06, p. 3) Applicant respectfully disagrees.

Bjornson

Bjornson is directed toward a thermocouple "formed by coating at least the temperature sensitive portion of the thermocouple element by plasma spraying thereon a material consisting essentially of zirconia" and that "this invention therefore comprises a thermocouple element or junction having a coating thereon which consists essentially of zirconia and which is applied thereto by plasma spraying." (col. 1, lines 49-51 & 60-63.) In addition, Bjornson teaches that "the reason for the high temperature sensing reliability of the thermocouple of this invention is that the plasma spraying technique produces an intermediate resistance-barrier layer between the zirconia and lengths 7 and 8 of thermocouple conductors 1 and 2. It is this layer which is believed to, at least in part, prevent or hinder electrical conduction from taking place through the zirconia at high temperatures." (col. 2, lines 33-40) (emphasis added). Therefore, Bjornson teaches that the plasma spraying technique is critical to the invention. (*See*, col. 1, lines 45-51; col. 2, lines 52-60; col. 3, lines 50-53.)

It is well settled that if the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. MPEP 2143.01; *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984). In the present case, Applicant respectfully submits that modification of Bjornson to include an oxide dispersion hardened within grain boundaries of the conductive component would eliminate the "intermediate resistance-barrier layer" described in Bjornson as the reason for the increased tempera-

ture range of the thermocouple. (*See*, col. 2, lines 33-40.) Accordingly, such a modification cannot be obvious, but in fact, Bjornson teaches away from such a modification as the plasma spray coating technique is described as critical to the increased accuracy of the thermocouple in higher temperature ranges. (*See*, col. 1, lines 45-51; col. 2, lines 19-29.)

Therefore, modification of Bjornson to include an oxide dispersion hardened within grain boundaries of the conductive component as required by all of the claims cannot be obvious as such a modification would destroy functionality of the system taught in Bjornson and in fact, Bjornson teaches away from such a modification.

Shoji et al.

Applicant disagrees that it would be obvious to modify Bjornson with Shoji et al. which is directed toward "providing a platinum material in which creep strength is elevated by improving a metal grain shape." (abstract) The method taught in Shoji et al. is not applicable for use in temperature measurement applications neither and to "creep strengthen the component" as submitted by the Examiner is not an issue for sensors. In fact, Shoji et al. explicitly states that "it is possible to produce a material highly suitable as a structural material for glass melting." (col. 9, lines 57-58) (emphasis added). The material created by the process in Shoji et al. are not usable as thermocouple wires as the final product cannot be drawn as wires, and more importantly, there is no signal repeatability of the final product. Signal repeatability, meaning a given temperature will

always generate a given voltage, is critical to for sensor applications. However, Shoji et al. does not ever contemplate this application as it is directed toward generating a structural material for glass melting. Accordingly, even if one were to modify Bjornson with Shoji et al., one would not arrive at the present invention and in fact, the sensor so derived would not be usable, which could not be obvious. *In re Gordon*, 733 F.2d 900, 221 USPQ2d 1125 (Fed. Cir. 1984).

It is well settled that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *See, e.g.,* MPEP 2143.01; *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In the present case, Applicant respectfully submits that there is absolutely no suggestion in either reference to modify the inventions as suggested by the Examiner. Bjornson is a thermocouple device, while Shoji et al. is a method directed toward generating structural materials for glass melting.

Applicant further submits that "[t]here must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself." *In re Oetiker*, 977 F.2d, 1443, 1447 (Fed. Cir. 1992). *See also In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). As Bjornson teaches away from the proposed modification and Shoji et al. is directed toward the

glass melting industry, Applicant submits that the Examiner is improperly using the pending claims as a roadmap to pick and choose elements from these unrelated references to formulate an obvious rejection. Accordingly, such a modification cannot be obvious.

Topp et al.

Applicant disagrees that it would be obvious to modify Bjornson with Topp et al. which is directed toward "an electrochemical sensor, and more particularly to a sensor useful in determination of the oxygen content in the exhaust gases from internal combustion engines." (abstract) Topp et al. is therefore directed toward a "sensor element to sense the composition of gases with respect to a reference gas." (col. 5, lines 2-4.) This is a completely different application from the present invention.

Topp et al. teaches that the "electrode which is exposed to the gas to be analyzed contains not only the platinum or platinum metal alloy but additionally has dispersed therein a material which impairs or prevents or inhibits recrystallization of the electrode material at high temperatures." (col. 2, lines 23-27.) This problem, however, is not at issue with thermocouple devices, which are not exposed to gases to be analyzed or to reference gases. In fact, Topp et al. clearly distances itself from the present process stating that the "structure and method of the present application is not directed to improving the mechanical strength of the electrode . . . [r]ather, the purpose and object of the invention is to improve the response speed of the sensor by maintaining a predetermined microscopic structure (porous) of the thin metal layer forming the elec-

trode on the ceramic carrier body" and that the "content of the additive material to the electrode material as such is higher than that used for dispersion-hardening." (Col. 2, line 60 – Col. 3, line 2.)

Therefore, while the Examiner has submitted that it would have been obvious . . . to modify the device disclosed by Bjornson, so as to make the second component by dispersion zirconium oxide in the grain boundaries and within the metal of the first component, as taught in Topp, in order to make it more stable at high temperatures, Topp et al. clearly states that the material is not directed to improving the mechanical strength. Additionally, the material content taught in Topp et al. "is significantly different than that used for dispersion-hardening."

As stated above, it is well settled that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *See, e.g.,* MPEP 2143.01; *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In the present case, Applicant respectfully submits that there is absolutely no suggestion in either Bjornson (which teaches away from the suggested modification) or Topp et al. (which addresses problems not at issue with thermocouple sensors) to combine and/or modify them as suggested by the Examiner. Accordingly, such a modification cannot be obvious.

It is respectfully submitted that claims 1-81, all of the claims remaining in the application, are in order for allowance and early notice to that effect is respectfully requested.

Respectfully submitted,

June 6, 2006

Wesley W. Whitmyer, Jr., Registration No. 33,558
Steven B. Simonis, Registration No. 54,449
Attorneys for Applicant
ST. ONGE STEWARD JOHNSTON & REENS LLC
986 Bedford Street
Stamford, CT 06905-5619
203 324-6155

In the Drawings

There are no amendments to the drawings.